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Plant nursery receives additional grant from USDA

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The National Ornamentals Research Site at Dominican University of California (NORS-DUC) has been awarded a $424,000 federal grant to continue studies focused on eliminating pests and diseases of nursery plants in order to safeguard plant health and the environment.

Working at NORS-DUC, scientists from the national research community are advancing studies focused on controlling the spread of *Phytophthora ramorum*, the pathogen that causes sudden oak death in the wild and ramorum blight in nurseries. Recently, researchers have undertaken studies focused on controlling the spread of *Phytophthora tentaculata*, a newly discovered plant pathogen found infecting plants in native plant nurseries and restoration sites in California.

In recent years, NORS-DUC research has helped shape USDA protocols that nursery plant growers can implement in order to eliminate pathogens from soil. NORS-DUC studies also have helped identify and validate nursery grower best management practices for reducing the risk of introducing pathogens into wild lands.

CLICK HERE to read KQED story about threat to California's native plants.

NORS-DUC is the only Federally-funded research site in the United States dedicated to the study of pests and diseases affecting the health of horticultural plants, many of which can be purchased in local garden centers. The facility opened in 2008 and each year receives funding from the Farm Bill, administered through the United States Department of Agriculture (USDA). To date Dominican has received more than $3 million in funding in support of the NORS-DUC facility and research program.

The rapid emergence of sudden oak death in the mid-1990s spurred emergency regulatory actions designed to control the spread of the *P. ramorum* plant pathogen within ornamental nurseries and from infested nursery stock to native wild lands. Today, growers in California face numerous restrictions when it comes to exporting plants. A nursery found to have a *P. ramorum* infected plant on its property is put under quarantine until the diseased plants are destroyed and the soil is found to be pathogen free.

NORS-DUC researchers have made considerable progress in the development of *P. ramorum* "green" technology management options for nursery growers, including steaming, solarization, and the use of bio-control agents.

In 2012, NORS-DUC scientists successfully demonstrated the elimination of the sudden oak death pathogen from contaminated nursery soil substrates by using a commercial steamer to heat the contaminated soil to 122F for 30 minutes. Researchers pumped steam into a soil bed covered with a tarp that lifts into a dome as the warmth rises inside, raising the temperature of the soil high enough to be fatal to the pathogen.

Working with the California Department of Food and Agriculture (CDFA), NORS-DUC scientists have employed a steam treatment at four nurseries in California, two of which were infested with *P. ramorum* and had been placed under federal quarantine. All treatments were successful, with no *P. ramorum* found in the nursery soils post-treatment and the two nurseries were released from quarantine.

The USDA recently approved steaming as a management option for growers with soil infested with *P. ramorum*.

Meanwhile, *P. tentaculata*, which causes root and stem rot, was first discovered in a nursery in Germany in 1993 on Chrysanthemums and in 2007 in Italy on Oregano. It has since been found in Spain, the Netherlands and China. In 2012, *P. tentaculata* was identified at a nursery in Monterey County and has since been found in additional native plant nurseries and on plants in restoration sites in four additional counties, raising concern for wild lands health.

The researchers are testing the effect of heat treatment on *P. tentaculata* in order to determine what steam temperatures kill the pathogen should it need to be eliminated from soils at native plant nurseries.

Meanwhile, NORS-DUC is collaborating on a multi-state steaming project funded by USDA in collaboration with Washington State University and Oregon State University. The aim of the project is to determine the effect of different climates, soil types, soil moisture, and equipment on soil steaming. Solarization and bio-control using beneficial micro-organisms recently were tested successfully at NORS-DUC in collaboration with partners from Oregon State University and USDA/Fort Detrick. Solarization experiments are on-going at a number of commercial nurseries in California and Oregon.

NORS-DUC recently partnered with scientists from the USDA, UC Cooperative Extension, the CDFA, the Parks Conservancy, UC Berkeley, the San Francisco Presidio Trust, and the San Francisco Public Utilities Commission, to create a working group to examine the threats to native plant habitats, focusing on *Phytophthora* species in native plant nurseries and restoration sites.